

7. Notes on the Indian Bustard (*Eupodotis edwardsi*), with especial reference to its Gular Pouch. By Sir WALTER ELLIOT, K.C.S.I., F.R.S., F.Z.S.

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When looking through some of the Society's 'Proceedings,' my attention was drawn to a paper by Dr. Murie, in the volume of 1868 (p. 471), on the occurrence of a gular pouch in certain species of *Otididæ*, and on the probable use of such an organ, which, with reference to observations made by him on an individual of *Otis australis*, he considers to be "a subject calling for more extended examination in other members of the family." In this view, the following notice of the habits of the Indian species (*Eupodotis edwardsi*) may not be without interest.

This Bustard is found in considerable numbers on the open basaltic plains of the Dekhan, where I had many opportunities of observing it during a residence of several years in that part of India. So common was it that the late Colonel Robert Mansfield, commanding the Poonah Irregular Horse quartered at Scroor between Ahmadnagar and Poona, had killed several hundreds when I saw him in 1829, and he was trying to make up his bag to 1000 birds, a feat which he accomplished some three or four years afterwards, and which, when the shy and wary character of the Bustard is considered, was thought to be a remarkable incident of sportsmanship.

I had often remarked the gular pouch with which the male is furnished, and communicated some notes I had made on the subject to the late Dr. Jerdon, who quoted them in his first Catalogue of the Birds of India, published in the Madras Journal of Literature and Science¹.

On the occasion there referred to, I was riding across an undulating plain near the village of Scindaghi, in the Sholapur district, on the morning of the 12th Oct. 1829, when I was attracted by a distant sound as of a person moaning. Thinking it proceeded from some one in pain, I turned towards the spot from which it came, and after riding upwards of a mile, during which the noise became louder and more distinct, I saw a large cock Bustard strutting about on a rising ground with gesticulations so extraordinary that I stopped to watch him. He paced round and round, ruffling his plumage, with wings sweeping the ground, tail erect, neck distended, the feathers standing out like a ruff, whilst he uttered the cry that had drawn me to the spot, every now and again rushing forward a few paces, then wheeling round, and pirouetting back again. I dared not approach very near, fearing the suspicious disposition of the bird, who would have made off as soon as he saw me; but I watched him, whilst, to use Mr. Bartlett's phrase, he was thus "showing off," evidently for the purpose of attracting the hens, several of whom were seen flying towards him.

¹ Vol. xii. p. 8, 1839-40, and in the Collected Vol. p. 147.

Whilst so engaged I heard the same sounds coming from another cock at a greater distance and many birds (generally so solitary and living so far apart) were seen on the wing; and afterwards I often heard the call at the same season, about the beginning of the cold weather (October to December).

On one occasion, somewhat later, in a different part of the country, south of the Kistna, in the month of February, I raised a hen sitting on her nest, which was a very simple affair, consisting of a little dry grass lying on the ground among some low bushes; in it were two eggs which I carried away and brought home in 1834. They met with rough usage during my second absence in India: one was broken to pieces, and the other much damaged, but my daughter has put it together and it is here on the table. These were of an olive-green colour, spotted and blotched with brown. Probably the hen lays more eggs, for I have seen three and even four well-grown young birds feeding together in company with the old one. They shift their ground according to the season, frequenting the high grassy downs (or *máls*) during the rainy and cold weather, then coming down towards the cultivation, and in the dry season drawing towards the neighbourhood of streams and rivers. Their food consists of insects, berries, grain, &c. In the cold season the crops of those I examined contained *Grylli*, beetles of all kinds (Cetonidæ, Elateridæ, Buprestidæ, Carabidæ), frequently the spongy nidus of the mantis, caterpillars, Julidæ, Scolopendridæ, &c., and on one occasion I found an unbroken egg of a Quail (*Coturnix textilis*); with these were seeds, berries of low-growing shrubs, stones and gravel. On the cultivated land they devour quantities of the wild gourd (the *kunker* of the natives), so abundant on the black cotton soil; and when the crops ripen they have recourse to the various kinds of millet, bolting the whole head often entire, and to the many sorts of pulse cultivated as a second crop. Thus it appears few things come amiss to them.

Their flight is slow, and heavy, with a regular motion of the wings. When suddenly disturbed they utter a hoarse note, something like *kok kok*, and fly far, but otherwise they are silent except at the breeding-season. I have heard of instances in which they have been ridden down by a well-mounted horseman where there was space enough¹. Falconers sometimes try to kill them with the Peregrine; but I always found that the *Bhyree* was no match for the Bustard, which lighted as soon as the Falcon stooped and attacked it so courageously that it would not repeat the assault. So rarely has the pursuit been successful that the Nawab of Banganapiliny in Cuddapah conferred a village Inam (or free tenure) on a falconer who achieved the feat.

These Bustards vary greatly in size, the hens weighing from 10 to 20 lbs., the cocks from 25 to 35 lbs. Col. Mansfield has got them as high as 40 lbs. I examined the gular pouch of a cock which weighed 32 lbs.; and, to gauge its capacity, secured it with a ligature at the bottom and filled it with water from the gape by means of a common

¹ In the 'Bengal Sporting Magazine' for 1857 there is an account of this having been accomplished by a party of officers at Loodiauah.

pint bottle; it held the contents of seven with ease. I thought at one time this organ might be intended to enable the bird to carry a supply of water in the hot season when every thing is dried up; but considering the solitary habits of the bird, and that the male alone is furnished with such an appendage, I incline to Dr. Murie's opinion that it is an organ of sound to attract the females in the breeding-season.

The following were the measurements of an average-sized male bird weighing 25 lbs.:—

	inches.
Length from point of beak to end of tail	48
Height, standing	41
Length of leg	22
„ „ tarsus	8½
Expansion of wings	7 ft. 7

As may be supposed, so remarkable a bird, so widely distributed, has many native names. It is the "*tokdar*" of the Mahomedan falconers; "*tughderi*" in Turkish; "*yére-laddu*" of the Canarese; "*batta mékha*" of the Yauádis or nomade bird-catchers; "*gunad*" of the Pardis or northern bird-catchers. In Rajputana, Gwalior, and Bundelkund it goes by the name of "*hukna*," from its note on being frightened, which the villagers compare to the sound "*huk, huk*." In Sagar they are called "*bherar*."

A well-known contributor to the 'Bengal Sporting Magazine,' under the *nom de plume* of "Gunga" (Dr. Brown), says that "during the breeding-season the cock calls like a lion—a kind of booming growl, whence its native local name of *gooraen*" (*gurayin*)¹. In other parts, he adds, "it is called *gugunbher*² and *sohun*."

P.S.—Since the foregoing was read, I have read Prof. Newton's paper in the 'Ibis' (vol. iv. p. 107, 1862), in which, with reference to some disparaging remarks of a continental writer on the statements of certain English naturalists, he gives an exhaustive summary of all that has been recorded on the subject of this peculiar structure of the Bustard. From this it appears that its true nature is still involved in doubt.

The occurrence of a gular pouch in the male of *Otis tarda* was first discovered, but not published, by Dr. James Douglas, F.R.C.P., before 1740. It is fully described by Edwards (Nat. Hist. B. ii. tab. 73); and this view seems to have been accepted till 1848, when Prof. Owen, in making a preparation of the head and neck of a male bird for the Mus. Coll. of Surgeons, stated that there was "no trace of a gular pouch." In 1853 Mr. Yarrell contributed a paper to the Linn. Trans. (vol. xxi. p. 159), in which he comes to the same conclusion. He was followed by Mr. Newton himself, whose examination failed to detect the existence of a separate distinct pouch with an external opening from above, and left it in doubt whether any

¹ Probably from the Hindustani "*gurgurára*," to thunder, to roll, to roar like a tiger.

² From "*gugan*," the sky, and "*bherna*," to hide=sky-hider.

such organ exists at all, or whether the bird only has the power of greatly distending the integuments lining the trachea at the season of amativity, and of so effecting the appearance exhibited when "showing off."

8. On the Dates of Publication of the Parts of Sir Andrew Smith's 'Illustrations of the Zoology of South Africa.'
By F. H. WATERHOUSE, A.L.S., Librarian to the Society.

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In the 'Ibis' for 1868, p. 499, the late Mr. G. R. Crotch published the dates of the issue of the various livraisons of Temminck and Laugier's 'Nouveau Recueil de Planches coloriées d'Oiseaux,' which many zoologists have no doubt found of great use when working at synonymy. As there are many other zoological works which have appeared in parts occupying some years in completion, and of which copies in the original wrappers are becoming very scarce, I have thought it might be desirable to record the exact dates of the issue of the parts of one of which my father has possession, namely Sir Andrew Smith's 'Illustrations of the Zoology of South Africa.'

As the copy here alluded to did not contain plates xviii. and xxxviii. (*Mammalia*), I have examined three or four other copies; and as neither of these plates are to be found in any of these, I presume they do not exist.

There are one or two other peculiarities perhaps worth calling attention to—namely, that plate xxxi. (*Reptilia*) was published after plate lxix., and plate xix. (*Pisces*) after plate xxvi.

Part.	Date.	Mammalia Plates.	Aves Plates.	Reptilia Plates.	Pisces Plates.	Inverte- brata Plates.
I.	1838.	1, 2.	1, 2, 3, 4.	1, 2, 3.	1.	
II.	1838.	3, 4, 5.	5, 6, 7, 8, 9, 10.	4.	.....
III.	1838.	.....	.....	.....	.....	1, 2, 3, 4.
IV.	1838.	6, 7.	11, 12, 13, 14, 15, 16, 17.	5.	.....
V.	1839.	8, 8 (bis), 9.	18, 19, 20, 21, 22, 23.	.....	2.	
VI.	1839.	10, 11, 12, 13, 14, 15.	24, 25, 26.	6.	.....
VII.	Sept. 1839.	16, 17.	27, 28, 29, 30, 31, 32.	7.	3.	
VIII.	Nov. 1839.	19.	33, 34, 35, 36, 37, 38, 39.	8.	4.	
IX.	Jan. 1840.	20, 21.	40, 41, 42, 43, 44, 45.	9.	5.	
X.	Mar. 1840.	22, 23, 24, 25.	46, 47, 48, 49, 50.	.....	6.	